



City of Redmond:

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Scope of Assistance:

The kickoff meeting with City of Redmond staff occurred on June 15, 2005. At that meeting, City staff provided direction to the consultant team on areas of emphasis for LID regulatory assistance. These areas included:

- Draft LID Section for inclusion in the development guide
- Review of water and sewer construction standards for opportunities to change bedding requirements
- Review of street standards for incorporation of LID
- Summary of maintenance standards and methods
- Model site analysis documents from an existing LID project

This direction resulted in review by the consultant team of the following City of Redmond codes and standards:

- Ordinance 2259 – Critical Areas Ordinance and Natural Features Element
- RCDG 20.80, Landscaping and Tree Protection
- RCDG 20C.30-100, Maximum Lot Coverage of Structures
- RCDG 20C.30.25-110, Maximum Impervious Surface, plus associated site requirement charts for the various zoning districts
- Ordinance 2221, Redmond Shoreline Master Program
- RCDG 20E.90, Clearing, Grading, and Stormwater Management
- Clearing, Grading, and Stormwater Management Technical Notebook, Issue No. 4
- RMC Chapter 15.06, Fire Code
- Standard Specifications and Details for Public Works Construction
- 20D.180 Subdivision Regulations

The Redmond Municipal Code and Community Development Guide did not appear to include provisions that would preclude or conflict with the implementation of LID. Our only recommended revision to existing code standards involved soil amendment guidelines (RCDG 20D.10-170). In fact, the Development Guide has a number of provisions that appear to encourage and facilitate the use of LID techniques. Notable among these are:

- The Rustic Street Standards in RCDG Appendix 20D-3. While the standards appear to be intended only for the NE Rose Hill Subarea, the 20 foot street width with interspersed parking pockets and landscaped swale areas is an excellent template for a city-wide LID street standard.
- Clustering/development standard modification provisions in RCDG 20C.30.50, 20C.30.105, and 20C.60.60. Modifications to code standards allowed under these sections should provide sufficient latitude to developers interested in applying the land use portion of an overall LID approach.
- Preservation of trees and other native vegetation in RCDG 20D.80.20-070.

Notwithstanding the observations on the Redmond Municipal Code and Community Development Guide made above, the Clearing, Grading, and Stormwater Management Technical Notebook poses a significant obstacle to implementing LID in Redmond. The 2001 DOE Manual provides some options for LID techniques. However, a portion of these techniques are prohibited or conditioned to have limited application. Further, neither the 2001 DOE Manual nor the Notebook provides credit for the use of LID techniques. To address these issues, the consultant team recommended revisions to the Notebook intended to provide greater latitude to City staff to approve techniques where studies and supporting documentation are sufficient to establish that they are consistent site conditions and will not pose a threat to the aquifer or other properties.

The consultant team also prepared a new chapter for the Notebook describing the LID approach in sufficient detail to guide interested developers. The draft chapter specifies that the LID techniques currently approved by DOE in the 2005 Manual may be allowed. An outline of these changes is presented below in a topical manner with the full text of the updates attached separately.

1. Code Review

The Redmond Municipal Code and Community Development Guide do not appear to include provisions that would preclude or conflict with the implementation of LID. In fact, the Development Guide has a number of provisions that appear to encourage and facilitate the use of LID techniques.

Our only recommended revision to existing code standards regards the top soil standards in 20D.10-170, Soil Guidelines. While the description may require that such soils contain a sufficient volume of organic matter, this is not specified as it is for the tree and shrub planting mix. Retaining native soils or amending disturbed soils to similar condition offers the benefits of stormwater retention as well as providing a good growing medium. The consultant team recommends encouraging retention of native duff and topsoil on previously undisturbed sites, increasing the depth to a minimum of eight inches for turf and groundcover areas, and setting minimum standards for organic content.

Clearing, Grading, and Stormwater Management Technical Notebook

The primary obstacle to implementation of LID in Redmond appears to be the Clearing, Grading, and Stormwater Management Technical Notebook. The 2001 DOE Manual provides some options for LID techniques. However, a portion of these techniques are prohibited or conditioned to have limited application. Further, neither the 2001 DOE Manual nor the Notebook provides credit for the use of LID techniques. To address these issues, the consultant team recommends the following revisions to the Notebook. In general, the proposed changes are intended to provide greater latitude to City staff to approve techniques where studies and supporting documentation is sufficient to establish that they are consistent site conditions and will not pose a threat to the aquifer or other properties. The consultant team also prepared a new chapter for the Notebook that will describe the LID approach in sufficient detail to guide interested developers. The draft chapter also specifies that the LID techniques currently approved by DOE in the 2005 Manual may be allowed.

2. Water and Sewer Bedding Requirements

At the initial meeting, staff expressed concern about the interception of groundwater by utility trenches. A memorandum addressing ways to reduce this problem was prepared to assist the City.

3. Chapter 16, Low Impact Development (new chapter)

At the initial meeting, staff requested a new LID section that would make LID a viable option to make it easier for developers to "do the right thing." As noted, the code currently provides flexibility in modifying the development standards through existing mechanisms. Therefore, a new section in the Development Guide does not appear warranted. Instead, the consultant team proposed a new chapter for the Technical Notebook. The new chapter is intended to provide early guidance for developers considering

the use of LID. Since LID is a land use as well as engineering approach to stormwater management, the chapter describes this interrelationship and how site planning relates to the goals of LID. The chapter also provides the nexus for using techniques not found in the 2001 DOE Manual and credits as approved by DOE.

4. Maintenance of LID Facilities

There is a growing body of documentation on the maintenance of LID facilities. Examples include PSAT's LID Technical Guidance Manual, the 2005 King County Surface Water Design Manual, the Prince George's County Bioretention Manual, and Seattle Public Utilities Maintenance Activity Protocol for Natural Drainage Systems. AHBL and the Washington State University Cooperative Extension have also prepared a maintenance manual that is included as an appendix to the package.

5. Model Site Analysis Documents

The site analysis documents for the Meadow on the Hylebos project in Pierce County is included as an appendix to the package.

Findings and Observations:

The consultant team was asked to integrate LID into the Redmond Municipal Code and Community Development Guide. Staff anticipates that the City will adopt the *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology, April 2005) during 2006. The technical assistance and regulatory revisions prepared under this grant are proposed to be considered and adopted as part of the same work program as the new stormwater management manual.